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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,959	03/31/2004	Kutay F. Ustuner	2004P01660US	8319

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

LAMPRECHT, JOEL

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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05/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/814,959	Applicant(s) USTUNER ET AL.	
	Examiner JOEL M. LAMPRECHT	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 4, 15, and 20 are objected to because of the following informalities:

Regarding claims 4 and 20, the claims are confusing as it does not appear that a step of summation was previously set forth. Regarding claim 15, it is unclear what additional structural limitation has been set forth. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hall et al (Us 6,071,240). Hall discloses the acquisition of ultrasound data from transducer elements, determining a coherence relationship (Col 5 Line 35- Col 6 Line 45) and setting beam amplitudes as a function of the coherence relationship on receive beams (Col 4 Line 15-55, Col 7 Line 45 – Col 8 Line 40, Col 2 Line 40—Col 3 Line 35, Figure 6, and more-specifically Col 8 line 55- Col 9 Line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-5, 7-12, and 15-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall et al in view of Ustuner et al (US 6,432,054 B1). Hall discloses a method for ultrasound imaging through obtaining data from transducers across a receive aperture (Col 1 Line 60-Col 2 Line 15), determining coherence factor (Col 7 Line 10-60), and setting a parameter as a function of coherence (Col 4 Line 15-55), calculating a ratio of coherent to incoherent sum (Col 7 Line 60-Col 8 Line 40, Col 2 Line 40- Col 3 Line 35), phase variance and calculating coherence factor as a function of time/phase delay (Col 7 Line 45-60, Col 6 Line 1-45). The methods also describe setting transmit parameters; receive parameters, and the individual firings of transducer elements (how many transmit, when they transmit) as a function of coherence (Col 7 Line 13- Col 9 Line 20, Col 6 Line 1-45, Col 4 Line 15-55). Mathematical analysis of data is propagated as a function of coherence factor and optionally image filtering can be performed as a function of coherence factor (Col 8 Line 40-Col 9 Line 5, Col 6 Line 60- Col 7 Line 12). Hall discloses an array, a processor for determining CF across the

array (Col 7 Line 45-Col 8 Line 15), synthesis of images through multiplication by the coherence factor (Col 4 Line 65-Col 5 Line 10, Col 8 Line 40 – Col 9 line 40), wherein the image processor is able to set the size of the beams, and dynamically sum the range, phase, and energy based on coherence (Col 3 Line 60- Col 4 Line 55, Col 5 Line 20 – Col 6 Line 45).

Hall et al discloses all that is listed above but fails to set a beamforming or image forming parameter other than amplitude of the beams as a function of coherence. Attention is then directed to the secondary reference by Ustuner et al which discloses the setting of such parameters as a function of coherence. The disclosure of Ustuner et al includes the setting of beams and focal zones as a function of coherence (Figure 11, Col 5 Line 25-55). Ustuner et al also disclose the calculation of variance of components of the beams across transducer elements (Col 5 line 22-55 and Column 2 Line 10-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the methods of analysis and control of Ustuner et al with the coherence measurement methods of Hall et al for the purpose of providing the most-desired data over the imaging procedure.

Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall et al in view of Ustuner et al(US 6,432,054 B1) and in further view of Rigby (US 5,910,115). Hall et al in view of Ustuner et al disclose all that is listed above but fail to disclose the setting of a nonlinear map as a function of coherence factors. Attention is directed to the secondary reference by Rigby which discloses the use of coherence factors to control setting of a nonlinear map or dynamic range (Figure 4, Col 5 Line 25-

Col 6 Line 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to have included the teachings of Rigby in the methods of Ustuner et al and Hall et al for the purpose of providing automated compensation and filtering for dynamic beamforming data.

Response to Arguments

Applicant's arguments filed 1/17/08 have been fully considered but they are not persuasive. The Examiner respectfully disagrees with the argument that Hall et al does not disclose at least altering signal amplitude (a beamforming parameter) based on coherence ratio/factor/comparison on receive beams. Col 8 line 55- Col 9 Line 5 seems to clearly show that this is the case with the Hall et al reference. With respect to the arguments that Hall doesn't meet independent claims 16, 30 or 34 or the dependent claims, the arguments are moot in view of the new grounds for rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on Monday-Friday 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ruth S. Smith/
Primary Examiner, Art Unit 3737

JML